

Appln No. 10/728,780
Amdt. Dated June 9, 2006
Response to Office Action of April 4, 2006

7

REMARKS/ARGUMENTS

In response to the Examiner's Office Action of April 4, 2006 the Applicant respectfully submits the accompanying Amendment to the claims and the below Remarks.

Regarding Amendment

In the Amendment:

independent claims 1 and 19 are amended to specify that the heater element is suspended by the electrodes within the bubble forming chamber so that a distance between a collapse point of the gas bubble and the nozzle is less than 5 microns. Support for this amendment can be found, for example, at page 20, line 25-page 21, line 2 of the present specification;

dependent claims 9 and 28 are cancelled;

dependent claims 12 and 31 are amended to conform with the amended independent claims;

dependent claims 18 and 37 are amended to delete the term "substantially" from the recitations "each heater element is substantially covered" and "applied to substantially all sides of the heater element";

dependent claims 2-8, 10, 11, 13-17, 20-27, 29, 30 and 32-36 are unchanged; and
withdrawn claims 38-54 are cancelled.

It is respectfully submitted that the above amendments do not add new matter to the present application.

Regarding Claim Objections

It is respectfully submitted that the above-described amendments to claims 18 and 37 to delete the term "substantially", provides the correction required by the Examiner.

Regarding 35 USC 112, first paragraph Rejections

It is respectfully submitted that the above-described amendment cancelling claims 9 and 28 overcomes the Examiner's rejections with respect to the subject matter claimed therein.

Regarding 35 USC 102(b) Rejections

It is respectfully submitted that the subject matter of above-described amended independent claims 1 and 19, and the claims dependent therefrom, is not disclosed by Kubby (US 5,706,041), for at least the following reasons.

Appln No. 10/728,780
Amdt. Dated June 9, 2006
Response to Office Action of April 4, 2006

8

In the present invention, the nozzle structure is configured for enhanced efficiency by positioning the heater element 10 to minimize the momentum necessary for the ink drop to overcome the surface tension of the ink 11 during ejection from the nozzle 3. That is, the heater element is arranged within the nozzle chamber 7 so that the distance between the collapse point of the bubble 12 and the ejection aperture 5 is most preferably less than 5 microns (see page 12, lines 6-30 and page 19, line 29-page 21, line 2 of the present specification). Independent claims 1, 19 and 38 have been amended to recite these features of the present invention.

On the other hand, Kubby does not disclose nor suggests a distance between a collapse point of a bubble nucleated by the suspended portion 18 and a nozzle, such as the capillary channel 32. However, Kubby discloses that the suspended portion 18 is formed of layers to a thickness of about 1.7 microns, such that from Fig. 5 it is clear that the collapse point would be further than 5 microns from the capillary channel (see col. 4, line 5-col. 5, line 27 of Kubby).

Therefore, the subject matter of amended independent claims 1 and 19, and claims 2-8, 10-18, 20-27 and 29-37, is not disclosed nor suggested by Kubby.

Regarding 35 USC 102(e) Rejections

The Examiner is respectfully requested to withdraw the rejections of claims 1-37 over Silverbrook (US 6,692,108) because Silverbrook is not applicable as prior art against the present application under 35 USC 102. This is because, the present application claims benefit to the filing date of November 23, 2002 of the parent application USSN 10/302,274 which is of even date with the filing date of November 23, 2002 of Silverbrook.

Regarding 35 USC 103(a) Rejections

It is respectfully submitted that the subject matter of above-described amended independent claims 1 and 19, and claims 2-8, 10-18, 20-27 and 29-37 dependent therefrom, is not taught or suggested by Kubby in view of any one or more of the further cited references in Inui et al. (US 5,719,604), DeMoor (The Fabrication and Reliability of Testing of Ti/TiN Heaters), Silverbrook (US 5,841,452), Feinn et al. (US 6,543,879) and Kashino et al. (US 5,534,898), because none of the disclosures of the further cited references would motivate one of ordinary skill in the art to arranged to suspended portion of Kubby to provide the collapse point of the nucleated bubble within 5 microns from the capillary channel.

AppIn No. 10/728,780
Amdt. Dated June 9, 2006
Response to Office Action of April 4, 2006

9

It is respectfully submitted that all of the Examiner's objections and rejections have been traversed. Accordingly, it is submitted that the present application is in condition for allowance and reconsideration of the present application is respectfully requested

Very respectfully,

Applicant:



C/o:

KIA SILVERBROOK
Silverbrook Research Pty Ltd
393 Darling Street
Balmain NSW 2041, Australia

Email: kia.silverbrook@silverbrookresearch.com
Telephone: +612 9818 6633
Facsimile: +61 2 9555 7762